



February 20, 2024

Mr. John Bobrek, PE
100 Conifer Hill Drive, Unit 204
Danvers, Massachusetts 01923

RE: Sight Distance Analysis
Proposed Lucas Lane, North Reading, Massachusetts

Dear Mr. Bobrek:

At your request, we have performed a sight distance analysis for of the proposed intersection of Haverhill Street and Lucas Lane in North Reading, Massachusetts. The Commonwealth of Massachusetts Department of Transportation Project Development and Design Manual (PDDM) provides the relevant standards for sight distance for vehicles turning left from a side street or driveway. The governing standard for this situation is found in Exhibit 3-11, Sight Triangle Case B¹ (attached).

We collected speed data for Haverhill Street on November 29, 2023. The data indicated an 85 percentile speed of 31 MPH. According to MassDOT standards, the appropriate speed for analysis of design criteria is 30 MPH.

Using a design speed of 30 MPH, the required intersection sight distance for a safe left turn maneuver from Lucas Lane to Haverhill Street southbound exceeds 335 feet. The corresponding required intersection sight distance for a safe right turn maneuver to Haverhill Street northbound exceeds 290 feet. As can be seen from Figure 1, the available intersection sight distance exceeds the required sight distance for both maneuvers. As a result, we have determined that the proposed intersection of Haverhill Street at Lucas Lane will have adequate sight distance.

¹ Massachusetts Highway Department, Project Development & Design Guide, 2006

STRATEGIC PERSPECTIVE. EXCEPTIONAL RESULTS.

February 20, 2024

**Sight Distance Analysis
Haverhill Street at Lucas Lane, North Reading, Massachusetts**

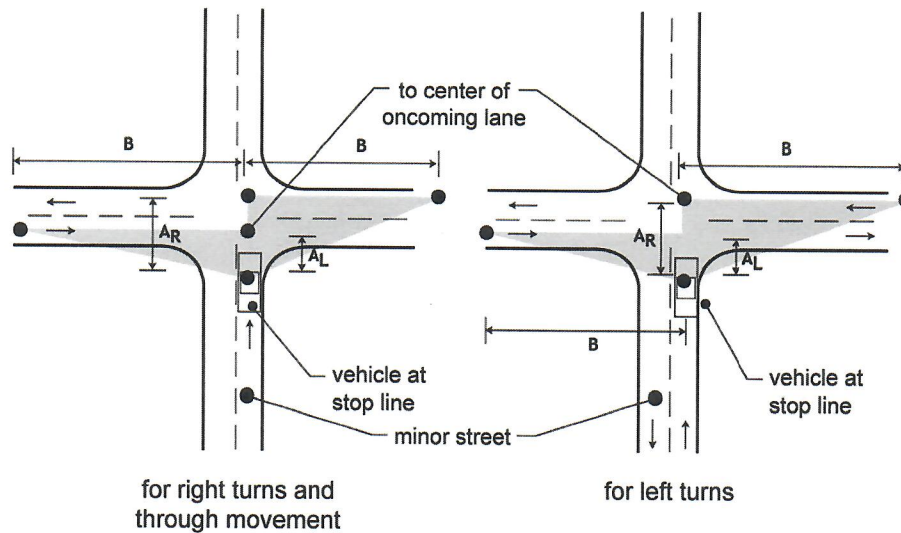
Should you have any questions regarding this letter, please do not hesitate to contact me directly. We appreciate this opportunity to be of service.

Sincerely,
FORT HILL COMPANIES LLC

A handwritten signature in blue ink, reading "W. F. Lyons Jr.", is positioned above the typed name.

William F. Lyons Jr., PE, PTOE, PTP
President

Exhibit 3-11
Sight Triangle Case B
Departure Sight Triangles



Sight Triangle Legs: Case B – Stop Control on Cross Street

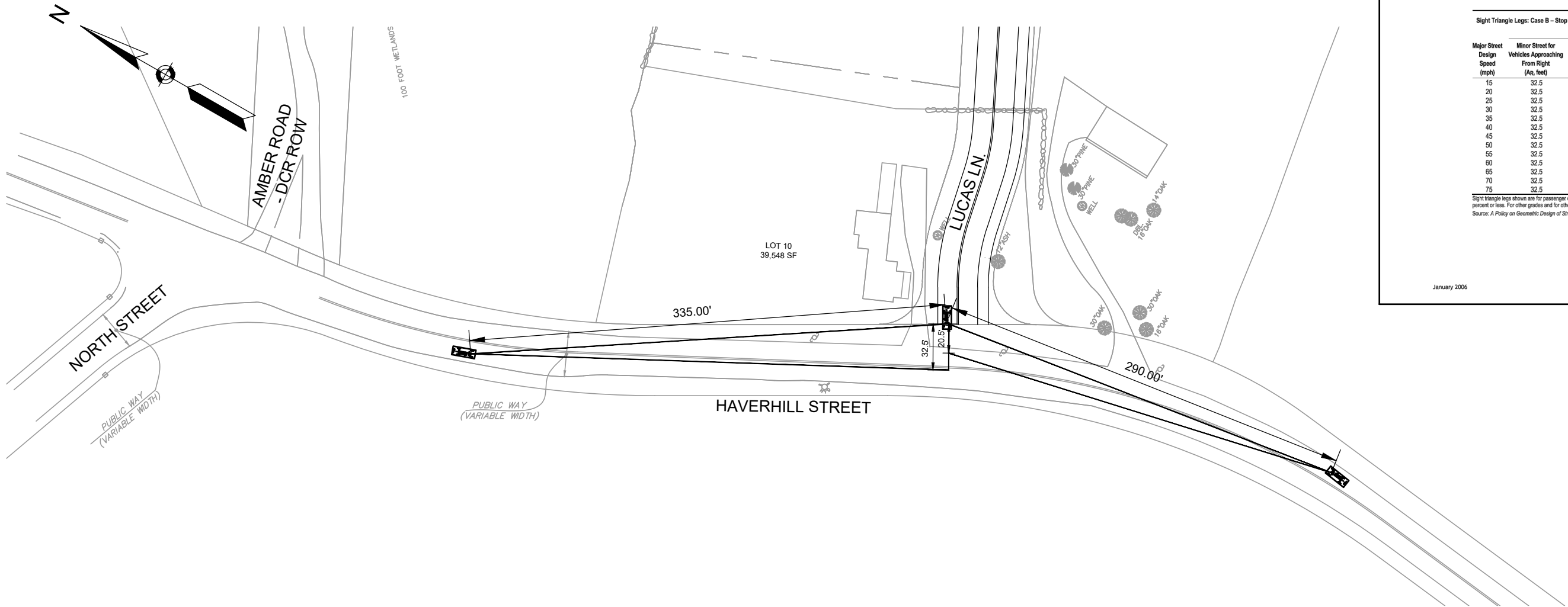
Major Street Design Speed (mph)	Length of Sight Triangle Legs (feet)			
	Minor Street for Vehicles Approaching From Right (A_R , feet)	Minor Street for Vehicles Approaching From Left (A_L , feet)	Major Street For Left Turns (B, feet)	Major Street for Right Turns or Through (B, feet)
15	32.5	20.5	170	145
20	32.5	20.5	225	195
25	32.5	20.5	280	240
30	32.5	20.5	335	290
35	32.5	20.5	390	335
40	32.5	20.5	445	385
45	32.5	20.5	500	430
50	32.5	20.5	555	480
55	32.5	20.5	610	530
60	32.5	20.5	665	575
65	32.5	20.5	720	625
70	32.5	20.5	775	670
75	32.5	20.5	830	720

Sight triangle legs shown are for passenger car crossing or turning into a two-lane street, with grades (all approaches) 3 percent or less. For other grades and for other major street widths, recalculate using AASHTO *Green Book* formulas.

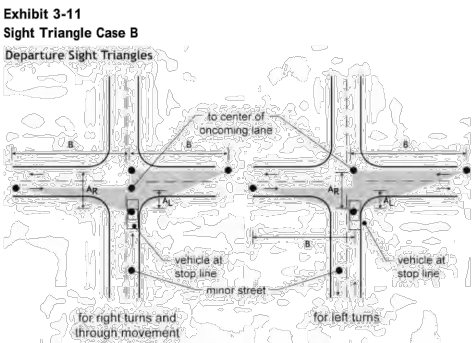
Source: *A Policy on Geometric Design of Streets and Highways*, AASHTO, Washington DC, 2004, Chapter 3 Elements of Design

NOTE:

1. DESIGN SPEED 30 MPH



SCALE: 1" = 80'



Sight Triangle Legs: Case B - Stop Control on Cross Street

Major Street Design Speed (mph)	Length of Sight Triangle Legs (feet)			
	Minor Street for Vehicles Approaching From Right (A _r , feet)	Minor Street for Vehicles Approaching From Left (A _l , feet)	Major Street For Left Turns (B _l , feet)	Major Street for Right Turns or Through (B _r , feet)
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SIGHT DISTANCE ANALYSIS (LEFT TURN FROM DRIVEWAY)

LUCAS LANE
NORTH READING, MASSACHUSETTS

PM:	W. F. LYONS
DESIGNER:	---
SCALE:	1" = 80'
DATE:	02/19/2024